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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,885

05/18/2006

Holger Stark

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EXAMINER

BASKIN, JEREMY S

ART UNIT

PAPER NUMBER

3753

MAIL DATE

DELIVERY MODE

10/07/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,885	Applicant(s) STARK ET AL.	
	Examiner Jeremy S. Baskin	Art Unit 3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 16-24 and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taub (1,727,621) in view of Topham et al. (5,044,604).

In regard to Claims 16-24, 29, 33, and 34, Taub teaches a lightweight valve (Figure 3) for internal combustion engines (page 1, lines 1-3) possessing a valve stem 48, 50, a hollow valve cone 58, and a valve disk 52. The valve cone and valve disk together form a hollow space 80 and the valve disk is provided with a gripping receiver 56. The valve stem, valve disk, and valve cone are separate components. Since the valve stem is directly connected to the valve disk, the valve cone is virtually free from forces acting on the valve disk during operation of the lightweight valve. In the embodiment of Figure 4, the valve stem and valve disk are integrally formed, therefore an end of an end portion of the valve stem contacts a top portion of the valve disk at 62.

Taub fails to specifically teach where the gripping receiver grips an end portion of the valve stem and is formed by a plurality of reinforcing ribs on the valve disk.

Topham discloses a valve head and stem. In Figures 3-6, Topham teaches where a plurality of reinforcing ribs 25 are disposed on a valve disk 14 and extend radially outward from the valve stem, or central axis, to a circumference of the valve disk. In Figure 5, three of the

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reinforcing ribs are arranged at a spacing of 120 degrees from one another. In Figure 6, an end face at 24 of the reinforcing ribs faces the center of the valve disk and forms a wall of the gripping receiver. The reinforcing ribs are rectilinear strips that have a height at 20 that increases linearly from the edge of the disk and is adjoined by a second reinforcing rib portion of constant height at 7 and an end portion of the stem 6 contacts a top portion of the valve disk 14 in Figure 6.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate, in Taub, a plurality of radially extending reinforcing ribs as a gripping receiver on a valve disk, as taught by Topham, so as to prevent the valve stem from deflecting horizontally with respect to the valve disk.

In regard to Claims 31 and 32, when making and or using the device of Taub, one necessarily performs the method of manufacturing a lightweight valve by producing a first one piece component forming a valve disk 52 by forming or casting (page. 2, lines 26-28 and lines 57-60), producing a second one piece component forming a valve stem 48, and producing a third component from a forming operation (stamping, page 2, lines 65-68) to create a valve cone 58. The valve disk and valve cone are connected by a non-positive connection and the valve cone is pushed onto the valve stem and disk assembly by a non-positive connection in Figure 3.

Taub fails to teach where a gripping receiver is formed with the valve disk as one piece for receiving a valve stem.

Topham teaches, in Figure 6, where a gripping receiver 7 is formed as one piece with a valve disk 14.

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At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate, in Taub, a valve disk formed as one piece with a gripping receiver, as taught by Topham, as per the rejection of Claim 16 above.

3. Claims 25, 26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taub in view of Topham as applied to Claims 16-24 above, and further in view of Cummings (2,439,240).

In regard to Claims 25 and 26, Taub teaches where a linearly rising first portion of the reinforcing ribs is adjoined by a second reinforcing rib portion, but fails to teach where the rib portions complement an inner wall of the hollow valve cone.

Cummings discloses a valve for internal combustion engines. Cummings teaches where the reinforcing ribs 18a extend from a radially external end S to the direction of the center of the valve disk 18c so as to complement the inner wall 18a of the hollow valve cone. In effect, the reinforcing ribs are the summation of numerous linearly rising reinforcing ribs that are each adjoined tangential to the inner surface of the valve cone. The reinforcing ribs 23a and 28 are provided with a cutout 28a, 28b and S in the area of the gripping receiver 23b, respectively, so as to reduce the size of the reinforcing end faces (col. 5, lines 4- 13).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate adjoined linearly rising reinforcing ribs with cutouts that complement an inner surface of valve cone, as taught by Cummings, so as to sufficiently support and connect a valve cone and valve disk and to allow coolant to fully occupy the created hollow space.

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In regard to Claim 28, Taub fails to teach wherein the reinforcing ribs and the valve cone are interconnected by a material process. Cummings teaches where the valve cone 10b and ribs 13 are cast and forged together (col. 1, lines 40-52).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to connect a valve cone and reinforcing ribs together within an internal combustion valve, as taught by Cummings, so as to create a permanent heat conducting path between the two components.

4. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Taub in view of Topham in view of Cummings as applied to Claim 25 above, taken with Blume (5,345,965).

In regard to Claim 27, Cummings teaches where the reinforcing ribs 18 bears against an inner wall 18a of the hollow valve cone 15b in sections 23b. However, Taub in view of Cummings fails to specifically teach where the reinforcing ribs possess an upper narrow side.

Blume discloses a composite valve body. In Figure 1, Blume teaches narrow reinforcing ribs 32 and annular reinforcing rib 35, each of which comprise varying thicknesses.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to incorporate, in Cummings, reinforcing ribs of varying thicknesses, as taught by Blume, so as to increase sectional stiffness of the valve body.

Response to Arguments

5. Applicant's arguments filed 15 May 2009, with respect to the rejection(s) of claim(s) 31 and 32 under 35 U.S.C. 102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Taub (1,727,621) in view of Topham et al. (5,044,604).

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Conclusion

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy S. Baskin whose telephone number is (571) 270-7421. The examiner can normally be reached on Monday through Friday, 7:30AM to 5:00PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S. B./

Examiner, Art Unit 3753

/Robin O. Evans/

Supervisory Patent Examiner, Art Unit 3753